

Having a distinct leaning towards mineralogy and crystallography, he devoted a considerable amount of study to these subjects also, and published several useful crystallographical papers; but inorganic chemistry claimed most of his attention, and his later papers as a rule savoured more or less of persulphates in some of their varied interactions. Thus, either alone or in collaboration with others, he published papers describing the action of persulphates on iodine, silver salts, thio-sulphates, &c.; and the neat modification of Crum's test for manganese, in which potassium persulphate is employed as oxidising agent instead of lead peroxide, was devised and elaborated into a quantitative colorimetric method by him. Other papers dealt with thallic sulphate; rubidium, caesium, and thallium persulphates; quantitative analysis by electrolytic methods; succinic acid and succinates; the compound of iodine with thiocarbamide, &c.

In addition to his chemical investigations he found time to examine some technical subjects, and his work upon the burning of mixtures of air and light hydrocarbon vapour led to the perfecting of the "Petrolite" safety incandescent lamp, for which he was awarded prizes by the Edinburgh Association of Science and Art, and the Royal Scottish Society of Arts. He also devised a simplified form of Bunsen burner which was particularly suitable for use by beginners in laboratory practice. The Keith prize and gold medal for the period 1899-1901 was awarded to him by the Council of the Royal Society of Edinburgh for his researches on persulphates. He was elected to fellowship of the Royal Society in 1904, and to the chair of chemistry in Dundee in 1908. With, to all appearance, many years for good work still before him, Dr. Marshall was a man whom inorganic chemistry could ill afford to lose.

LEONARD DOBBIN.

NOTES.

REUTER'S Agency is informed that Sir David Bruce will leave England on November 1 for the purpose of concluding his sleeping sickness investigations in Central Africa. He will be accompanied by Lady Bruce, who is herself a member of the Commission. Sir David and Lady Bruce will sail in the *Edinburgh Castle* from Southampton, and will proceed to Cape Town, whence they will travel by train to Beira. From that place they intend to go up the Zambesi and Shire rivers to Lake Nyasa.

The Paris correspondent of *The Times* reports the death of the toxicologist, Dr. Jules Ogier, at sixty years of age. Our contemporary gives the following particulars of Dr. Ogier's career:—After some years' work with Berthelot, during which period his writings on arsenic and other poisons attracted considerable attention, he was appointed director of toxicology at the Prefecture of Police, where his work was of the greatest value to justice. He planned most of the large water systems in France, and his labours in connection with the purification of drinking water have been of great service to public health. He was

in a way the creator of modern toxicological chemistry, and his many works include a treatise which has become a classic in that branch of science.

THE seventeenth annual autumn foray of the British Mycological Society was held at Haslemere on September 22-27, the Haslemere Educational Museum, founded by the late Sir Jonathan Hutchinson, serving as headquarters during the meeting. A well-arranged programme of excursions was planned by Mr. E. W. Swanton, and a large number of fungi were collected, including many rare and interesting forms. The mornings were generally devoted to the examination and arrangement of specimens, some of the most noteworthy of which were:—*Rhizopogon rubescens*, *Hydnum melaleucum*, *H. Queletii*, *Sparassis laminosa*, *Clavaria formosa*, *Cortinarius bolaris*, *Mycena crocata*, and *Sclerotinia baccarum*, and also the Mycetozoa, *Licea pusilla*, *Hemitrichia clavata*, *Oligonema nitens*, and *Diderma simplex*. On Wednesday evening, September 24, Mr. A. D. Cotton (president for the year) delivered an address entitled "Suggestions as to the Study and Critical Revision of Certain Genera of Agaricaceæ," pointing out the urgent need of critical work, and emphasising the diagnostic value of certain microscopic characters. Other members contributed papers, namely, Mr. F. T. Brooks, on pure cultures of several Basidiomycetes and Ascomycetes; Prof. Buller, on the hymenium-structure in Hymenomycetes; and Mr. J. Ramsbottom, on the history of the classification of Discomycetes. In passing a vote of thanks to the trustees of the museum, the hope was expressed that the scientific and educational work hitherto carried on there would be continued, and that it would be possible to establish the museum upon a permanent basis. The officers elected for 1914 were:—President, Prof. A. H. R. Buller; vice-president, Miss G. Lister; honorary secretary and treasurer, Mr. Carleton Rea; the localities for the spring and autumn meetings being the Forest of Dean and Doncaster respectively.

At a conference held on September 19 in the rooms of the Linnean Society, Burlington House, Dr. A. B. Rendle, F.R.S., gave an account of the inception and activities of the plant protection section of the Selborne Society, under the auspices of which the meeting had been called, and outlined the various causes at work tending to the diminution or extermination of native plants in Britain—the building over of suburban and rural districts, drainage of marshes and bogs, smoke pollution, excessive collecting of rare plants by botanists and their agents, the wholesale digging up of both rare and common species by hawkers, &c. A brisk discussion followed regarding the proposed remedial measures for the preservation of the British flora; and though this was marked by considerable divergences of opinion, it was generally agreed that on one hand much remained to be done in the way of arousing public interest in the matter, while on the other there was much to be said for the introduction of legislation which should secure at least the same degree of protection and scheduling of plants as that afforded to bird-life by the Wild Birds Protection Acts. Several speakers pointed out

that much might be done with the powers now possessed by local authorities but rarely exercised by them, and that in many cases small areas might be secured as nature reserves by public-spirited persons interested in the local flora before such areas were destroyed as plant habitats.

DR. J. MITCHELL BRUCE will deliver the Harveian oration at the Royal College of Physicians of London on Saturday, October 18.

UNDER the auspices of the National Association for the Feeble-Minded, a conference of public authorities upon the subject dealt with by the association will be held at the Guildhall, London, on October 23.

THE first Italian congress of radiology will be held at Milan on October 12-13. In connection with the congress there will be an exhibition of apparatus connected with Röntgen rays and investigations in radio-activity.

THE twenty-first James Forrest lecture of the Institution of Civil Engineers will be delivered in the lecture theatre of the new building of the institution, Great George Street, Westminster, on Thursday, October 23, at 9 p.m., by Mr. Alexander Gracie, upon the subject of "Progress of Marine Construction."

THE death is reported, at the early age of forty-two, of Mr. E. L. Morris, the biologist and curator in natural science in the museum of the Brooklyn Institute of Arts and Sciences. In addition to holding this office, Mr. Morris was one of the special plant experts of the U.S. Herbarium and the U.S. Department of Agriculture.

MR. W. A. TOOKEY is to lecture to the Junior Institution of Engineers to-morrow—October 3—on gas-engine testing. On October 20 a paper is to be read by Mr. G. S. Cooper on modern coke-ovens. The new president of the institution, Sir Boverton Redwood, will deliver his presidential address on December 5, taking as his subject "The Future of Oil Fuel."

THE Russian Government, reports *The Japan Chronicle* (September 11), has decided to establish a physical observatory at Vladivostok and experimental stations on the Pacific coast with the view of co-operating with the authorities of meteorological stations in China and Japan. Mr. S. D. Griboyedov, a prominent meteorologist, has been commissioned to investigate suitable sites for the proposed structures and to submit a report thereon.

It was announced in *The Times* of September 22 that a Malay python (*Python reticulatus*) in the Zoological Society's Garden had laid a number of eggs some days previously, which, after a considerable delay, she eventually brooded in the manner distinctive of this group of snakes. Unfortunately, there is every reason to believe that the eggs were not fertilised. A similar event took place in the Tower Menagerie so long ago as 1828, a second at the Jardin des Plantes in 1841, a third in the Society's Gardens in 1881, and a fourth in the Colombo Gardens in the autumn of 1904.

IN *The Times* of September 25 it is stated, on the authority of a local correspondent, that steps are being taken, under the auspices of the Resident-General of France and of his Highness the Bey of Tunis, to establish in Tunisia a reserve in which the fast disappearing fauna of the country may find immunity from persecution. For this purpose some 4000 acres of wild mountainous country, with an adjoining marsh of 5000 acres, have been secured; and as this area already contains representatives of many of the wild animals of the country, the work of stocking the reserve will be much less heavy than would otherwise have been the case.

THE first general meeting of the London Wireless Club was held on Tuesday of last week at the City of Westminster School, Mr. F. Hope Jones in the chair. Prof. Silvanus P. Thompson, F.R.S., Mr. A. A. Campbell Swinton, and Sir John Macpherson-Grant, Bart., have consented to become vice-presidents of the club. The honorary secretary is Mr. R. H. Klein, 18 Crediton Road, West Hampstead, N.W. The objects of the society were explained by the chairman to be the guarding of the interests of all experimenters in wireless telegraphy and telephony, and the organisation of desultory and for the most part useless work into co-operative scientific research. The committee was authorised to negotiate for the acquisition of suitable club-rooms, and their equipment with suitable aerial and instruments. A letter was read from Sir A. F. King, K.C.B., on behalf of the Postmaster-General, welcoming the formation of such a society, and indicating that certificates of its advisory committee would be accepted by him as qualification for the granting of licences. There will be two classes of members and full membership will be limited to persons having scientific qualifications. The subscriptions are at present 10s. 6d. for London members, and 5s. for members living outside a 25 miles' radius. The entrance fee is fixed at 2s. 6d.

A NATIONAL Gas Congress and Exhibition will be held at Shepherd's Bush, London, during the whole of October, under the presidency of Sir Corbet Woodall. Space will be devoted in the exhibition to special exhibits related to hygienic and scientific lighting, the raw materials used in gas manufacture, the preparation and uses of residual products, the application of scientific apparatus, and to engineering in relation to gas manufacture, gas distribution, and gas measurement. A comprehensive series of conferences and popular lectures has been arranged. Among the subjects of the conferences are smoke abatement, to discuss the use of gas for fuel in relation to the problem of the smoke nuisance; food and cookery, to consider means for increasing knowledge of economical and correct methods of preparing and cooking food; the hygienic aspect of gas for lighting, heating, cooking, and ventilation; the lighting, heating, and ventilation of schools; the physiological and mental disadvantages of unscientific illumination; the teaching of cooking in schools; the economic value of adequate illumination; the use of gas as a fuel for industrial purposes; the use of gas for power; and

the principles of scientific illumination in their relation to the use of gas for lighting.

MANY ways have already been suggested and demonstrated for causing each eye to see its appropriate picture of a stereoscopic pair, but we learn from *The Times* of September 26 that Messrs. Friedmann and Reiffenstein are showing yet another at the Austro-German Medical Congress now being held in Vienna. The new method depends upon the fact that a white image is invisible on a white background, and a black image is invisible on a black background, while both are visible if the backgrounds are reversed. The authors therefore bleach the negative of one of the pair, make an ordinary transparency from the other, and superpose the two plates. This compound plate will show either the one or the other picture according as the background put behind it is light or dark, and if the background is arranged so that it appears light to one eye and dark to the other—that is, light or dark according to the side that it is viewed from—then each eye will see its own picture without any instrumental means. A background that serves this purpose is a sheet of glass that is “ribbed convexly,” while its back surface is “prepared in a special manner” that is not described. The great advantage of such stereoscopic pictures is that they only need looking at as if they were single pictures to show the full stereoscopic effect. It is stated that the few specimens shown are very satisfactory.

THE provisional programme of the Royal Geographical Society for the coming session has just been issued. We learn from it that the following papers have been arranged:—“The Work and Adventures of the Northern Party of Capt. Scott’s Antarctic Expedition,” R. E. Priestley (November 10); “Explorations in the Eastern Karakoram,” Mrs. Bullock Workman and Dr. Hunter Workman (November 24); “Is the Earth Drying up?” Prof. J. W. Gregory, F.R.S. (December 8); “An Expedition to Dutch New Guinea,” A. F. R. Wollaston (December 16). In addition to the foregoing, the following papers may be expected:—“Famous Maps in the British Museum,” J. A. J. de Villiers; “Journey through Arabia,” Capt. G. E. Leachman; “Geographical Aspects of Two Sub-Expeditions in the Antarctic,” Griffith Taylor; “The Federal District and Capital, Cambera, of the Commonwealth of Australia,” Griffith Taylor; “Journeys in the Upper Amazon Basin,” Dr. Hamilton Rice; “The Gulf Stream,” Commander Campbell Hepworth, C.B.; “The Red Sea and the Jordan,” Sir William Willcocks, K.C.M.G.; “Fresh Discoveries in the Eket District, Southern Nigeria,” P. A. Talbot; “The Panama Canal,” Dr. Vaughan Cornish; “The Atlantic Ocean,” Prof. E. Hull, F.R.S.; “The Anglo-German Boundary Survey in West Africa,” Capt. W. V. Nugent.

In *L’Anthropologie*, vol. xxiv., Nos. 2 and 3, Prof. G. H. Luquet proposes an explanation of the rock markings at Gavr’inis. Comparing the figures with those on the megalithic monuments in Brittany and Ireland, he suggests that they are ultimately based on

an anthropomorphic attempt to represent the human figure, particularly of the eyes and eyebrows. This contribution is lavishly illustrated by woodcuts, and the explanation now offered well deserves respectful study by archæologists in this country.

MR. ANANDA COOMARASWAMY’S useful periodical, *Visvakarma*, devoted to the reproduction of examples of Indian architecture, sculpture, painting, and handicrafts, has reached its fifth number. We have a fine series of photographs, among which the most noticeable are the splendid lion column from Sarnath, the Trimurti or sacred triad from the Caves of Elephanta, and interesting figures of deer, monkeys, a cat and mice from Mamallapuram. The Asokan statue from Besnagar is one of the most remarkable sculptural remains of the period.

THE *National Geographic Magazine* for September is devoted to Egypt, and contains a large collection of beautiful photographs. Perhaps the most interesting contribution is the account by Mr. C. M. Coburn of the sacred ibis cemetery and jackal catacombs at Abydos. The ibises are as carefully mummified as the royal personages at Deir-el-Bahari, and were it not for the ravages by white ants, hundreds of these sacred birds could now be examined in as perfect a state as when they were buried. The jackals were preserved because they were sacred to Anubis, the friend of the righteous dead, who guided the soul across the trackless desert to the fields of Aalu, the land of the dead.

THE excavation of the Roman city of Corstopitum, the modern Corbridge, begun by the Northumberland County History Committee and the Corbridge Excavation Committee in 1906, was actively prosecuted during the past season. Among the objects unearthed were forty-eight gold coins and a gold ring, probably deposited about A.D. 385, several altars, a vast quantity of pottery, a bronze pig containing 160 gold coins ranging from Nero to Marcus Aurelius, the well-known Corbridge lion, a smithy with arrow-heads and other articles of iron. Thus a vast amount of material for the study of Roman pottery has been found, and the buildings include some of the most imposing relics in Roman Britain, as well as some of the worst walls ever erected by human hands. The animal remains are of high scientific value, and some addition has been made to our knowledge of Roman metallurgy. The museum has been rearranged, and now contains a collection of Roman remains unequalled in the north of England, except, perhaps, at York.

We have to acknowledge the receipt from Messrs. Dulau and Co., Ltd., of a copy of a catalogue of works and papers on various groups of the lower invertebrates.

IN the report of the museums of the Brooklyn Institute for 1912, reference is made to the large increase in the zoological collections, and the mounting of a group of marsh-hawks for the series illustrating the fauna of Long Island. Of the fauna and flora of that island a popular account is in course of publica-

tion in vol. ii. of the Science Bulletin of the Institute, the first portion of this dealing with the bats, and the second with two species of molluscs.

IN the September number of *The American Naturalist*, Prof. H. H. Newman, of Chicago University, discusses at length the remarkable phenomenon of polyembryonic development exhibited by *Dasyfus novemcinctus* and certain other species of armadillos, and its bearing on sex-determination. The females of these species, when pregnant, invariably develop four embryos, enclosed in a single chorionic envelope, which are always of the same sex, the process of development being summarised by the author as follows:—"The ovogenesis is normal; a single egg is fertilised by a single spermatozoon; the cleavage is apparently normal, and gives rise to a blastodermic vesicle similar to that of other mammals, especially the rodents; germ-layer-inversion affords an easy mechanism for producing several embryos in a single chorion, for the quadruplets arise by means of dichotomous budding of the inner ectodermic vesicle without affecting the enveloping membranes of the vesicle, which form the common chorion; the subsequent embryonic development of the several embryos is as independent as it can be under monochorial conditions, since each individual has its own separate amnion, allantois, umbilicus, and placenta."

M. FUJIOKA contributes an elaborate study of the structure of the wood in the Japanese conifers to the Journal of the College of Agriculture, University of Tokyo, vol. iv., No. 4. The detailed descriptions of the wood in the various species examined are followed by a key to the Japanese genera of Coniferæ based upon the history of their wood, and the memoir is illustrated by seven plates containing eighty-four very fine photomicrographs.

WE have received a copy of the Proceedings and Transactions of the Croydon Natural History and Scientific Society, 1912-13, which contains various items of interest. Among these there is an account of the organisation of the Regional Survey of Croydon, which the society have undertaken, and which, when completed, will form one of the most elaborate records of the natural history of a limited area that has been made. The volume also includes reports of addresses given by Dr. H. F. Parsons and Mr. A. G. Tansley, dealing respectively with "Plant Growth and Soil Conditions" and with "Practical Study of Vegetation in the Field." There is an extensive appendix containing the records of the Meteorological Committee, and giving the daily rainfall throughout the year 1912 at various stations in the district.

MISS M. C. KNOWLES, in a paper on the maritime and marine lichens of Howth (Sci. Proc. Royal Dublin Soc., August, 1913), gives an interesting account of the lichen vegetation of Howth Head, Dublin Bay, illustrated by several beautiful photographs by Mr. R. Welch. More than half of the memoir is occupied by a detailed description of the ecology of the lichens which inhabit the siliceous rocks on the coast and form more or less sharply defined belts or zones dominated, from above downwards, by species of

Ramalina, orange-coloured lichens, species of *Lichina*, *Verrucaria maura*, and marine Verrucarias. Three new species are described, and notes are given on some remarkable forms of Ramalina, while the memoir as a whole may be regarded as the most important contribution that has yet been made to the ecology of the littoral lichen vegetation of this country.

WE have received a Spanish edition of the "International Codex of Resolutions adopted at Congresses, Conferences, and at Meetings of the Permanent Committee, 1872-1910," translated by the Central Observatory of Manila from the second German edition. The preparation of this useful work was recommended by the International Meteorological Committee at the meeting at Southport in 1903, and Drs. Hellmann and Hildebrandsson were requested to undertake it. At the conference at Innsbruck, in 1905, a manuscript copy of the Codex was presented, and its publication in English, French, and German was urged as "a most valuable means for promoting international meteorological work." In view of the extended use of Spanish in central and southern America, and also in eastern Asia, Señor J. Algué was thanked for his offer to arrange for its publication in that language. It should be mentioned that due reference was made by Dr. Hellmann to a somewhat similar work published by Dr. Wild (then president of the International Meteorological Committee) in the *Repertorium für Meteorologie*, vol. xvi., which contained particulars for 1872-1891, and was at the time of considerable value.

IN a well-known experiment of De la Rive's, one end of an electromagnet projects into an evacuated bulb containing two electrodes, one of which takes the form of a ring. When a discharge is passed the luminous column is seen to rotate round the magnet pole. This experiment receives various interesting extensions in a paper by Prof. Righi on "Rotazioni Ionomagnetiche" (R. Accad. di Bologna, February, 1913). In a typical experiment the two electrodes, which are here cylindrical, are placed in the same vertical line, and the lower one is surrounded by a suspended metal cylinder. An external magnet produces a field parallel to the line joining the electrodes. When the discharge passes it is found that the cylinder rotates. The theory shows that the effect is due to the oblique impact, on the cylindrical walls, of the ions carrying the discharge.

WE have received a copy of Dr. P. W. Bridgman's paper on the thermodynamic properties of twelve liquids between 20° C. and 80° C. and up to 12,000 kilograms per sq. cm. The work was carried out at the Jefferson Physical Laboratory of Harvard University by the aid of the Rumford Fund. The liquids used were methyl, ethyl, propyl, isobutyl, and amyl alcohols, ethyl ether, acetone, carbon bisulphide, phosphorus trichloride, and ethyl bromide, all of which were obtained in an approximately pure state. The liquid was contained in a cylinder closed by a piston, the motion of which determined the change of volume. The pressure applied was measured by the change of electrical resistance of a standardised manganine wire.

The whole was enclosed in a bath the temperature of which could be varied between the limits stated above. Dr. Bridgman finds that the compressibility and thermal expansion of a liquid may decrease with increasing temperature and may increase with increase of pressure. He is disposed to attribute these remarkable results to deformation of the actual molecules when forced into contact at these high pressures.

PROBABLY no branch of the community is more open to be defrauded than those who must perforce exclude carbohydrates from their diet. The unsuspecting patient purchases foods which are not only glaringly misrepresented, but also may be positively harmful to him. It is to be feared, moreover, that the medical adviser is often but little better informed, though in default of a source of trustworthy information as to the nature of the commercial products he can scarcely be held responsible. The Connecticut Agricultural Experiment Station has done great service, therefore, in issuing a lengthy report dealing with the composition and merits of all the so-called diabetic flours, breads, biscuits, and other diabetic foods of both European and American origin—the list is an exhaustive one. To all but the few initiated the result of the inquiry must be very startling. By far the greater number of the foods examined were definitely fraudulent in that they did not fulfil the claims made for them, and many of them indeed contained as much starch as is present in ordinary white bread. The report also deals with the excessive cost of such foods, which has, in the past, rendered their use almost prohibitive to the poor man. A select list of genuine diabetic foods, which return good value, is given, in which it is satisfactory to find the products of British firms of repute. Our chief purpose in directing attention to the report is, however, to urge the necessity of some control being exercised over the indiscriminate misrepresentation of foodstuffs of which this is a type with its attendant menace to the public health. The report merits the widest possible publication.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR OCTOBER:—

- Oct. 2. 3h. om. Mars at quadrature to the Sun.
 „ 14h. om. Jupiter at quadrature to the Sun.
 6. 6h. 21m. Jupiter in conjunction with the Moon (Jupiter $4^{\circ} 51' N.$).
 8. 3h. 37m. Uranus in conjunction with the Moon (Uranus $3^{\circ} 35' N.$).
 13. 14h. om. Uranus stationary.
 14. 9h. om. Venus nearest the Sun.
 19. 9h. 19m. Saturn in conjunction with the Moon (Saturn $6^{\circ} 56' S.$).
 21. 13h. 7m. Mars in conjunction with the Moon (Mars $3^{\circ} 55' S.$).
 „ 18h. om. Neptune at quadrature to the Sun.
 22. 7h. 54m. Neptune in conjunction with the Moon (Neptune $4^{\circ} 53' S.$).
 27. 5h. om. Uranus at quadrature to the Sun.
 „ 8h. 31m. Venus in conjunction with the Moon (Venus $3^{\circ} 17' N.$).
 30. 20h. 17m. Mercury in conjunction with the Moon (Mercury $2^{\circ} 2' N.$).
 31. 13h. om. Neptune stationary.

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COMETS 1913b (METCALF) AND 1913c (NEUJMIN).—Prof. H. Kobold's ephemeris for comet Metcalf during the present week is as follows (*Astronomische Nachrichten*, No. 4682):—

M.T. Berlin.									
		R.A. (true)			Dec. (true)			Mag.	
		h.	m.	s.					
Oct.	2	...	23	18	26	...	+72 6'0	...	8'2
	3	...	22	54	25	...	69 52'2		
	4	...	22	34	49	...	67 23'4		
	5	...	22	18	45	...	64 42'1	...	8'0
	6	...	22	5	26	...	61 51'4		
	7	...	21	54	26	...	58 53'3		
	8	...	21	45	16	...	55 50'0		
	9	...	21	37	9	...	+52 43'7	...	8'0

This comet is now in Cepheus and rapidly reducing its northern declination, moving towards the constellation of Cygnus. It is well up above the horizon and gaining in magnitude.

On the other hand, comet Neujmin is decreasing in magnitude, becoming fainter than magnitude 12. This comet seems to be moving in an elliptical orbit, and Prof. Cohn finds a period of nine years. Its appearance has attracted the attention of numerous observers, since while the nucleus has appeared quite stellar, the gaseous envelope has been alternating between visibility and disappearance.

ANOTHER COMET.—A Kiel telegram, dated September 27, distributes the information communicated by Prof. Hussey that Mr. Delaren on September 26, 10h. 29'2m. M.T. Laplata, discovered a comet of the tenth magnitude, its position being given as R.A. 21h. 54m. 16s. and declination $2^{\circ} 34' 27'' S.$ In the issue of *The Times* for September 30 it is suggested that probably this comet may be identical with Westphal's comet, which is now due, and for which a search has been continually made. If it be Westphal's, then it will move northward during the next month and will increase considerably in brightness, possibly becoming visible to the naked eye. At its appearance in 1852 it was a fairly conspicuous naked eye object.

THE SPECTRUM OF α -CANUM VENATICORUM.—In two previous notes in this column (June 5 and July 24) reference has been made to Prof. Belopolsky's observations of the spectrum of this star, the lines in the spectrum showing striking variations of a periodic nature. The *Astronomische Nachrichten*, No. 4681, contains now the preliminary discussion of a large number of spectrograms, sixty-seven in number, which he has been able to secure in the interval between April 15 and June 23. All the photographs were taken with the 30-inch and a three-prism spectrograph, the exposures lasting one hour; an iron comparison was photographed twice at each exposure. In the present communication Prof. Belopolsky first describes in detail the appearance of the lines observed. From the measures of the intensity of the line $\lambda 413'00$ he finds a period of 5'50 days, and he places several other lines in the same category, i.e. they become bright at the same time as $\lambda 413'00$. Another group of lines behaves in an opposite manner, disappearing when the former group become more intense; the period is also very near 5'50 days. Other lines such as hydrogen, magnesium, calcium, and iron display little if any change. From the line of sight measures he finds a certain group of lines, which includes H., Mg., and Fe., which indicate no changes dependent on the 5'5 day period, while other lines display variations of radial velocity equal in period to that of the intensity of the lines. Prof. Belopolsky suggests as an explanation of the above and other observations that a gaseous satellite or a gas ring moves round